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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Sheet 1 of 5

**Complete if Known**

Application Number	10/665,439
Filing Date	18 September 2003
First Named Inventor	Lester F. Ludwig
Group Art Unit	UNKNOWN
Examiner Name	UNKNOWN
Attorney Docket Number	2738-11

**U.S. PATENT DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number - Kind Code <sup>2</sup> (if known)			
KZL	A1	US-3,519,331	07-07-1870	Cutrona et al.	
	A2	US-4,572,616	02-25-1986	Kowel et al.	
	A3	US-5,016,976	05-21-1991	Homer et al.	
	A4	US-5,061,046	10-29-1991	Lee et al.	
	A5	US-5,323,472	06-21-1994	Falk	
	A6	US-5,416,618	05-16-1995	Juday	
	A7	US-5,426,521	06-20-1995	Chen et al.	
	A8	US-5,432,336	07-11-1995	Carangelo et al.	
	A9	US-5,544,252	08-06-1996	Iwakura et al.	
	A10	US-5,706,139	01-06-1998	Kelly	
	A11	US-5,815,233	09-29-1998	Morokawa et al.	
	A12	US-5,859,728	01-12-1999	Colin et al.	
	A13	US-5,859,776	09-26-1999	Pasch	
	A14	US-6,021,005	02-01-2000	Cathey, Jr. et al.	
	A15	US-6,229,649 B1	05-08-2001	Woods et al.	
	A16	US-6,252,908 B1	06-26-2001	Tore	
	A17	US-6,404,553 B1	06-11-2002	Wootton et al.	
	A18	US-6,421,163 B1	07-16-2002	Culver et al.	
	A19	US-6,505,252 B1	01-07-2003	Nagasaka	

**FOREIGN PATENT DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>3</sup>
		Country Code <sup>3</sup> - Number <sup>4</sup> - Kind Code <sup>5</sup> (if known)				
KZL	B1	05-066377	03-19-1993	Amako Atsushi et al.		

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Signature

KZL Patel

Date  
Considered

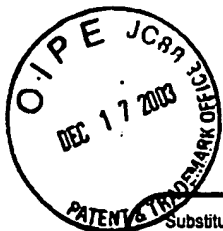
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<sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

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		Filing Date	18 September 2003		
		First Named Inventor	Lester F. Ludwig		
		Group Art Unit	UNKNOWN		
		Examiner Name	UNKNOWN		
Sheet	2	of	5	Attorney Docket Number	2738-11

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
73P	C1	SUMIYOSHI ABE, et al., "An optical implementation for the estimation of the fractional-Fourier order", Optics Communications 137 (May 1, 1997), 214-218.	
	C2	N. I. ACHESER, Theory of Approximation, Dover, New York, 1992. pp. 1-23 & 78-81.	
	C3	JUN AMAKO, et al., "Kinoform using an electrically controlled birefringent liquid-crystal spatial light modulator", Applied Optics, vol. 30, No. 32, Nov. 10, 1991, pp. 4622-4628.	
	C4	V. BARGMANN, "On a Hilbert Space of Analytical Functions and an Associated Integral Transform," Comm. Pure Appl. Math, vol. 14, 1961, 187-214.	
	C5	L. M. BERNARDO, O. D. D. Soares, "Fractional Fourier Transforms and Imaging," Journal of Optical Society of America, vol. 11, No. 10, Oct. 1994. pp. 2622-2625.	
	C6	PHILIP M. BIRCH, et al., "Real-time optical aberration correction with a ferroelectric liquid-crystal spatial light modulator", Applied Optics, vol. 37, No. 11, Apr. 10, 1998, pp. 2164-2169.	
	C7	Y. BITRAN, H. M. OZAKTAS, D. MENDLOVIC, R.G.DORSCH, A. W. LOHMANN, "Fractional Fourier Transform: Simulations and Experimental Results," Applied Optics vol. 34 No. 8, Mar. 1995. pp. 1329-1332.	
	C8	E.U. CONDON, "Immersion of the Fourier Transform in a Continuous Group of Functional Transforms," in Proceedings of the National Academy of Science, vol. 23, pp. 158-181, 1937.	
	C9	P. J. DAVIS, Interpolation and Approximation, Dover, New York, 1975. pp. 24-55, 106-185, 328-340.	
	C10	B. W. DICKINSON AND D. STEIGLITZ, "Eigenvectors and Functions of the Discrete Fourier Transform," in IEEE Transactions on Acoustics, Speech, and Signal Processing, vol. ASSP-30, No. 1, Feb. 1982.	
Y	C11	R. DORSCH, "Fractional Fourier Transformer of Variable Order Based on a Modular Lens System," in Applied Optics, vol. 34, No. 26, pp. 6018-6020, Sep. 1995.	

Examiner Signature	73P Patel	Date Considered	9/17/05
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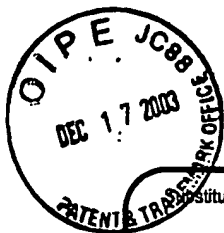
OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS			
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<i>afz</i>	C12	M. FATIH ERDEN, et al., "Design of dynamically adjustable anamorphic fractional Fourier transformer", Optics Communications 138 (Mar. 1, 1996), pp. 52-60.	
	C13	M. F. ERDEN, "Repeated Filtering in Consecutive Fractional Fourier Domains," doctoral dissertation at Bilkent Univ., Aug. 18, 1997.	
	C14	G. B. FOLLAND, Harmonic Analysis in Phase Space, Princeton University Press, Princeton, NJ, 1989. pp. 51-55, 223-224, 238-239, 193.	
	C15	J. W. GOODMAN, Introduction to Fourier Optics, McGraw-Hill, New York, 1968. pp. 77-197.	
	C16	E. HECHT, "Grin Systems", Optics. Third Edition, Ch. 6, section 6.4, pp. 277-280, Addison-Wesley publishing, (c) 1998.	
	C17	K. IIZUKA, Engineering Optics, Second Edition, Springer-Verlag, 1987. pp. 238-311.	
	C18	SANG-II JIN, et al., "Generalized Vander Lugt Correlator with fractional Fourier transforms for optical pattern recognition systems", Lasers and Electro-Optics, 1997, CLEO/Pacific Rim, Pacific Rim Conf. on. p. 311.	
	C19	F. H. KERR, "A Distributional Approach to Namias' Fractional Fourier Transforms," in Proceedings of the Royal Society of Edinburgh, vol. 108A, pp. 133-143, 1983.	
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<i>✓</i>	C21	M. A. KUTAY, M. F. ERDEN, H.M. OZATKAS, O. ARIKAN, C. CANDAN, O. GULERYUZ, "Cost-effective Approx. of Linear Systems with Repeated and Multi-channel Filtering Configurations," IEEE pp 3433-3436, May 12, 1998.	

Examiner Signature	<i>afz</i>	Date Considered	9/17/05
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		First Named Inventor	Lester F. Ludwig
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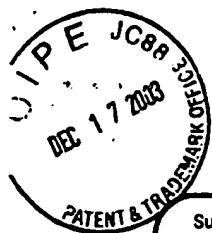
OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
KFL	C22	M. A. KUTAY, "Generalized Filtering Configurations with Applications in Digital and Optical Signal and Image Processing," doctoral dissertation at Bilkent Univ. Feb. 24, 1999.	
	C23	M. A. KUTAY, M. F. ERDEN, H.M. OZATKAS, O. ARIKAN, C. CANDAN, O. GULERYUZ, "Space-bandwidth-efficient Realizations of Linear Systems," Optics Letters, vol. 23 No. 14, Jul. 15, 1998. pp. 1069-1071.	
	C24	N. N. LEBEDEV, Special Functions and their Applications, Dover, New York, 1965. pp. 60-77.	
	C25	L. LEVI, Applied Optics, vol. 2 (Sec. 19.2), Wiley, New York, 1980.	
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	C28	M. E. MARHIC, "Roots of the Identity Operator and Optics," Journal of Optical Society of America, vol. 12, No. 7, Jul. 1995. pp. 1448-1459.	
	C29	V. NAMIAS, "The Fractional Order Fourier Transform and its Application to Quantum Mechanics," in J. of Institute of Mathematics and Applications, vol. 25, pp. 241-265, 1980.	
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✓	C32	H. M. OZAKTAS, D. MENDLOVIC, "Fourier Transforms of Fractional Order and their Optical Interpretation," Optics Communications, vol. 101, No. 3, 4 pp. 163-169.	

Examiner Signature	KFL Patel	Date Considered	9/17/05
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HL	C33	H. M. OZAKTAS, D. MENDLOVIC, "Fractional Fourier Transforms and their Optical Implementation I," Journal of the Optical Society of America, A vol. 10, No. 9, pp. 1875-1881, Sep. 1993.	
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	C35	H. M. OZAKTAS, M. A. KUTAY, O. ARIKAN, L. ONURAL, "Optimal filtering in Fractional Fourier Domains," IEEE Transactions on Signal Processing, vol. 45, No. 5, pp. 1129-1143, May 1997.	
	C36	H. M. OZAKTAS, H. OZAKTAS, M. A. KUTAY, O. ARIKAN, M. F. ERDEN, "Solution and Cost Analysis of General Multi-channel and Multi-stage Filtering Circuits," IEEE, Piscataway, N. J., pp 481-484, Oct. 1998.	
	C37	H. M. OZAKTAS, H. OZAKTAS, M. A. KUTAY, O. ARIKAN, "The Fractional Fourier Domain Decomposition (FFDD)," Signal Processing, 1999. 4 pgs.	
	C38	A. PAPOULIS, "Systems and Transforms with Applications in Optics," Krieger, Malabar, Florida, 1986. pp. 1, 344-355, 410-421, 430-435.	
	C39	S. THANGAVELU, "Lectures on Hermite and Laguerre Expansions," Princeton University Press, Princeton, New Jersey, 1993. pp. 1-23, 84-91, 110-119.	
	C40	N. WIENER, "The Fourier Integral and Certain of Its Applications," (Dover Publications, Inc., New York, 1958) originally Cambridge University Press, Cambridge, England, 1933. pp. 46-71.	
✓	C41	"Taking the Fuzz out of Photos," Newsweek, vol. CXV, No. 2, Jan. 8, 1990.	

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